British West Indies Central Sugar Cane Breeding Station, Barbados.

THIRTEENTH ANNUAL REPORT

Ending September 30, 1946

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TABLE OF CONTENTS

		Page
I.	FOREWORD	2
II.	SUGAR CANE BREEDING — SEEDLING SELECTION AND TRIALS	3
III.	DESPATCH OF SEEDLINGS TO THE PLANT QUARANTINE STATION	27
IV.	PERFORMANCES OF SEEDLINGS IN CONTRIBUTING COLONIES	27
V.	MOSAIC DISEASE INVESTIGATIONS	34
VI.	STATEMENT OF EXPENDITURE FOR 1945–46	34
	APPENDIX I	35
	APPENDIX II	40

Errata.

Page 3 lines 7 and 17 for B.47' read B.s.47'.

I. FOREWORD

ADVISORY COMMITTEE

The thirteenth meeting of the Advisory Committee was held at the Imperial College of Tropical Agriculture, Trinidad, from the 4th to the 6th of October, 1945, and the Proceedings of the Committee have been circulated. At this meeting, the Advisory Committee met the Committee of the Plant Quarantine Station and discussed ways and means of passing up to fifty seedlings annually through quarantine instead of twenty, as in the past, in view of the greater number of promising seedlings now being produced. The Joint Committee decided that additional accommodation should be provided at the Plant Quarantine Station for this purpose, that an estimate of the cost together with recommendations as to the type of building should be drawn up by the Committee of the Plant Quarantine Station and submitted to the Chairman, that the Chairman should consult with the B.W.I. Sugar Association with reference to the provision of funds and that as a temporary measure only three cuttings of each seedling should be sent to the contributing colonies, thus enabling thirty instead of twenty seedlings to be passed through the Plant Quarantine Station with existing accommodation.

The export of varieties to foreign countries was discussed particularly with regard to the question of obtaining annual subscriptions to the funds of the Station from the U.S. Dependencies in the Caribbean and from the French Colonies of Martinique and Guadeloupe. The Committee discussed the more general applications of this matter and laid down the rules of procedure to be adopted in the case of any future application from foreign countries.

During the year under review, Guadeloupe became a contributor to the funds of the Station and received a shipment of selected plants of approved varieties.

TECHNICAL

The year under review has been again one of steady progress. The number of crosses made amounted to the record total of 114 none of which were purely noble crosses. Many of the more promising seedlings are nearing the commercial stage, e.g., B.41211 and B.41227 while B.4098 has been recommended for commercial planting.

The policy of increasing the variability of the seedling population by making inter-specific crosses within the genus *Saccharum* and inter-generic crosses with closely allied species is now beginning to produce results and some excellent seedlings having highly desirable characteristics are being obtained.

S. J. SAINT,

Director of Agriculture,

Chairman of Advisory Committee.

British West Indies Central Sugar Cane Breeding Station, Barbados

THIRTEENTH ANNUAL REPORT FOR THE YEAR ENDING THE 30TH OF SEPTEMBER, 1946

II. SUGAR CANE BREEDING—SEEDLING SELECTION AND TRIALS

(i) SUGAR CANE BREEDING — B.47′ AND B.48′ SERIES

Sugar cane breeding was carried out at Groves from October to December, 1945.

All breeding work consisted in crossing, and the usual lantern method was employed. The breeding plots were removed from Lion Castle to Groves in 1944. The field at Groves, which had just been taken over, was in very poor condition, and very great difficulty was experienced in getting a reasonable stand established in the breeding plots. This resulted in poor and irregular flowering of many of the varieties in 1945, and made it very difficult, and in some cases impossible, to obtain the desired crosses.

(ii) SEEDLING RAISING, POTTING AND PLANTING IN THE FIELD NURSERY—B.47′ AND B.48′ SERIES

The usual sowing and potting methods were used. Sowing was done from December to January, and potting was completed by February. Potted seedlings were planted in the Field Nursery during the second week in May.

Owing to a growing demand from various colonies for quick growing canes which would mature in 10 to 12 months, it was decided to plant some of the seedlings raised during the past season directly into a First Year Seedling Trial with the object of selecting such short season types. These seedlings will be numbered in the same way as any other series of seedlings, except that a small "s" will be introduced after the "B" to denote that they are short season types.

This procedure will mean that the long season types will be bred and raised approximately two years before they are cut for the first time, while the short season types will be bred and raised one year prior to cutting for the first time. In other words, canes bred and raised in any one season will be represented in the series of the following two years, e.g., canes bred in 1946—47 season will be represented by the B.s.48′ and B.49′ Series.

Table I shows under group heads the number of seedlings germinated, potted, planted in the Field Nursery and in the B.s.47′ Series First Year Seedling Trial, while Appendix I gives details for all crosses made. Table Ia shows the number of seedlings planted in the B.s.47′ Series and the crosses from which these were obtained.

Table I.

Numbers of Seedlings in each Group Germinated, Potted and Planted in the Field Nursery — B.48′ Series

Group	No. of crosses	No. germinated	No. potted	No. planted in field nursery
Saccharum officinarum x S. spontaneum				
Glagah nobilisations	7	3,365	1,623	678
Local nobilisations	4	1,018	266	48
Celebes nobilisations	1	221	200	165
Noble x Local x Celebes	2	1,127	776	450
Noble x Glagah x Celebes ..	2	1,595	1,400	1,105
Noble x Glagah x Local	6	5,830	2,780	1,644
Noble x Glagah x Celebes x Local ..	1	200	200	150
S. officinarum x S. spontaneum x S. barberi				
Noble x Celebes x Chunnee ..	1	969	651	300
Noble x Glagah x Chunnee ..	19	15,599	6,409	3,246
Noble x Local x Chunnee ..	11	4,743	3,822	2,009
Noble x Celebes x Chunne x Glagah	7	6,107	3,415	2,183
Noble x Celebes x Chunnee x Local	3	1,314	1,301	530
Noble x Glagah x Chunnee x Local ..	21	7,330	5,319	2.978
Noble x Glagah x Celebes x Local .. x Celebes	1	239	239	150
S. officinarum x S. spontaneum x S. sinense				
Noble x Celebes x Glagah x sinense	2	230	219	177
S. officinarum x S. spontaneum x S. barberi x S. sinense				
Noble x Chunnee x Glagah x Sinense	5	102	102	89
Noble x Chunnee x Glagah x Local x Sinense	2	90	90	87
S. officinarum x S. sinense				
Noble x Sinense	1	20	20	—
S. officinarum x S. robustum				
Noble x Robustum	5	1,482	951	510
S. officinarum x S. spontaneum x S. robustum x S. sinense				
Noble x Glagah x Robustum x Sinense	3	720	300	176
S. officinarum x S. barberi x S. sinense				
Noble x Chunnee x sinense ..	1	65	65	55
S. officinarum x S. barberi x robustum				
Noble x Chunnee x Robustum ..	1	549	213	160
S. officinarum x S. barberi x S. spontaneum x S. robustum				
Noble x Chunnee x Local x Robustum	2	1,705	200	140
S. officinarum x Erianthus arundinaceous				
Noble x Erianthus	1	387	300	150

TABLE I.—*(Contiued)*

GROUP	No. of crosses	No. germinated	No. potted	No. planted in field nursery
S. officinarum x S. spontaneum x Erianthus maximus				
Noble x Glagah x Erianthus ..	1	—	—	—
S. officinarum x S. spontaneum x ?				
Noble x Local x Fiji 3	1	—	—	—
S. officinarum x S. spontaneum x E. arundinaceous				
Noble x Celebes x Erianthus ..	1	—	—	—
Noble x Glagah x Erianthus ..	1	40	39	29
E. maximus x E. arundinaceous				
Erianthus x Erianthus	1	—	—	—
Grand Totals	114	55,047	30,900	17,209

TABLE IA.

List of Crosses and the Number of Seedlings Planted in the B.s.47 First Year Seedling Trial (May 1946)

CROSS	GROUP	No. of seedlings in First Year Seedling Trial
	S. officinarum x S. spontaneum	
B.35247 x B.3337 ..	Noble x Celebes x Glagah	455
Co.421 x B.41211 ..	Noble x Local x Glagah	494
Co.421 x B.41261 ..	Noble x Local x Glagah	90
P.O.J.2878 x B.41211 ..	Noble x Local x Glagah	100
	S. officinarum x S. spontaneum x S. barberi	
B.35197 x B.34104 ..	Noble x Local x Celebes x Chunnee ..	433
B.35207 x P.O.J.2878 ..	Noble x Glagah x Chunnee	293
B.4145 x B.37193 ..	Noble x Glagah x Chunnee	245
B.39177 x B.37193 ..	Noble x Local x Chunnee	94
B.35218 x B.4098 ..	Noble x Local x Chunnee	225
B.4145 x B.34104 ..	Noble x Local x Glagah x Chunnee ..	298
Co.421 x B.4098 ..	Noble x Local x Glagah x Chunnee ..	293
B.38233 x B.34104 ..	Noble x Local x Glagah x Chunnee ..	120
B.39157 x B.4098 ..	Noble x Local x Celebes x Chunnee ..	230
	Total	3,375

It will be noted that extensive use, as parents, has been made of the noble cane B.3439, the Celebes nobilisations B.35197 and B.35247, and varieties of mixed derivation such as B.34104, B.35218 and B.4098. Fairly extensive use as a parent has also been made of the local nobilisation B.41211, but only in experimental crosses on a basis of its performance.

(iii) PLANTING THE FIRST YEAR SEEDLING TRIAL—B.47 SERIES

This series was bred in 1944, planted in the field nursery in May, 1945, and into the First Year Seedling Trial in October 1945. This trial will be harvested in 1947. Details for each of the crosses are given in Appendix II. A summary of this Appendix is presented in Table II.

TABLE II.

Number of Crosses and Seedlings in each Group Planted in the First Year Seedling Trial, October 1945—B.47' Series

GROUP	No. of crosses	No. of seedlings planted in trial
S. officinarum x S. spontaneum		
Noble x Glagah	7	747
Noble x Celebes x Glagah	4	860
Noble x Glagah x Local	1	80
S. officinarum x S. barberi x S. spontaneum		
Noble x Chunnee x Glagah	15	2,523
Noble x Chunnee x Local	1	80
Noble x Chunnee x Celebes	3	259
Noble x Chunnee x Celebes x Local	1	80
Noble x Chunnee x Celebes x Glagah	2	180
S. officinarum x S. spontaneum x S. robustum		
Noble x Glagah x Robustum	3	161
Noble x Celebes x Robustum	3	194
S. officinarum x S. spontaneum x S. sinense		
Noble x Glagah x Sinense	3	190
Noble x Celebes x Sinense	1	80
S. officinarum x S. barberi x S. sinense		
Noble x Chunnee x Sinense	1	72
S. officinarum x S. spontaneum x S. barberi x S. sinense		
Noble x Glagah x Chunnee x Sinense	3	360
Co.281 and its Derivatives		
Noble x Chunnee x Co.281	3	410
Noble x Glagah x Co.281	7	1,020
Noble x Chunnee x Glagah x Co.281	3	270
Noble x Celebes x Co.281	6	865
Noble x Sinense x Co.281	2	110
Co.290 and its Derivatives		
Co.290 x Co.281	4	242
Noble x Glagah x Co.290	7	503
Noble x Celebes x Co.290	3	263
Co.290 x Co.290	2	165
Noble x Co.290	1	60
Noble x Chunnee x Co. 290	1	200
Noble x Sinense x Glagah x Co.290	1	1,000
Noble x Robustum x Co.290		55
Grand Totals	88	11,029

This trial was planted in five randomised blocks, the seedlings from each cross being, as far as possible, evenly distributed between each of the blocks, except where the total population for the cross numbered 100 seedlings or less, when all the seedlings were planted together in Block I.

(iv) RESULTS OF REAPING THE FIRST YEAR SEEDLING TRIAL— B.46′ SERIES

These were bred in 1943, planted in the field nursery in May 1944, and from this into the First Year Seedling Trial in October 1944

As in the previous year, all of the seedlings were harvested about mid-season, to ensure a reasonable germination of the cuttings.

The seedlings were cut, bundled and laid out for inspection as in recent years. Four hundred and four selections were made.

Table III gives details of the field and final selections.

TABLE III.

First Year Seedlings — B.46′ Series
Field and Final Selections

CROSS	No. of Seedlings reaped	No. selected in field	% field selection	No. finally selected	% final selection
B.3353 x B.3337 ..	518	11	2	3	1
„ x B.39175 ..	116	4	3	—	—
„ x B.39178 ..	114	1	1	—	—
„ x B.40118 ..	120	6	5	2	2
„ x Co. 290 ..	120	3	3	—	—
B.3354 x B.3337	218	7	3	3	1
„ x B. 37224 ..	90	—	—	—	—
„ x B.37261 ..	40	—	—	—	—
„ x B.40118 ..	120	8	7	3	3
„ x Co. 290 ..	90	8	9	3	3
B.3365 x B.34104 ..	308	18	6	10	3
„ x B.37175 ..	204	8	4	5	2
„ x B.39269 ..	60	1	2	—	—
„ x B.39274 ..	120	4	3	—	—
„ x B.40267 ..	150	5	3	4	3
„ x C.P.36–137 ..	117	11	9	4	3
B.3365 x 28 N.G.251 ..	235	12	5	8	3
„ x Early Bascom ..	12	2	17	2	17
B.3439 x B.37175 ..	731	32	4	14	2
„ x B.38155 ..	109	9	8	3	3
„ x B.38279 ..	40	1	3	—	—
„ x B.40270 ..	72	3	4	2	3
„ x Pasoeroean ..	60	4	7	3	5
„ x P.O.J.2714 ..	60	9	15	6	10
„ x C.P.32–156 ..	50	3	6	3	6
„ x C.P.36–134 ..	120	13	11	7	6

TABLE III.—*(Continued)*

CROSS	No. of Seedlings reaped	No. selected in field	% field selection	No. finally selected	% final selection
B.3439 x C.P.36–144 ..	114	7	6	3	3
„ x C.P.36–145 ..	121	8	7	4	3
„ x C.P.36–156 ..	120	2	2	1	1
B.34102 x B.3337 ..	200	13	7	3	2
„ x B.34104 ..	300	18	6	9	3
„ x Co.290 ..	70	1	2	—	—
B.34117 x P.O.J.2878 ..	180	10	6	3	2
B.35197 x B.34104 ..	869	43	5	24	3
„ x B.38281 ..	120	2	2	—	—
„ x B.38285 ..	120	1	1	1	1
„ x P.O.J.2878 ..	392	11	3	6	2
„ x Co.281 ..	154	2	1	1	1
B.35206 x P.O.J.2878 ..	180	12	7	7	4
B.35207 x P.O.J. 2878 ..	288	8	3	3	1
„ x N.C.100 ..	44	3	7	3	7
B.35218 x B.3337 ..	886	53	6	16	2
„ x B.35187 ..	60	1	2	—	—
„ x B.37175 ..	240	18	6	11	5
„ x B.38192 ..	90	4	4	2	2
„ x B.39229 ..	90	5	6	—	—
„ x B.4098 ..	336	25	7	16	5
„ x P.O.J.2878 ..	350	16	5	8	2
„ x C.P.36–154 ..	60	2	2	1	1
B.35247 x B.391 ..	180	10	6	5	3
„ x B.3337 ..	935	57	6	19	2
„ x B.34104 ..	700	34	5	12	2
„ x B.35187 ..	390	15	4	4	1
„ x B.35269 ..	40	3	8	2	5
„ x P.O.J.2878 ..	120	9	8	1	1
B.37161 x B.34104 ..	745	51	7	31	4
„ x B.35187 ..	42	2	5	1	3
„ x B.39250 ..	60	6	10	4	7
„ x B. 40133 ..	90	3	3	1	1
„ x B.40255 ..	120	9	7	2	2
„ x B.40256 ..	121	11	9	6	5
„ x P.O.J.2878 ..	1,602	109	7	53	3
„ x C.P.31–517 ..	60	3	5	2	3
„ C.P.x C.P.36–116	39	3	8	1	3
B.37162 x B.3337 ..	95	3	3	1	1
B.37194 x B.34104 ..	70	2	2	1	1
B.37266 x B.34104 ..	60	6	10	2	3
B.37266 x B.34104 ..	60	1	2	—	—
B.38178 x B.34104 ..	50	2	4	—	—
B.38212 x B.34104 ..	300	14	5	4	1
B.39192 x B.34104 ..	80	6	8	3	4
B.39207 x P.O.J.2878 ..	90	4	4	2	2
B.39253 x B.34104 ..	90	1	1	—	—
B.39207 x P.O.J.2878 ..	90	2	2	1	1
B.4094 x B.3337	285	14	5	7	2
B.4096 x B.35187 ..	72	9	13	6	8

TABLE III.—*(Concluded)*

Cross	No. of seedlings reaped	No. selected in field	% field selection	No. finally selected	% final selection
B.40105 x P.O.J.2878 ..	90	2	2	1	1
B.40105 x B.37193 ..	200	25	13	13	7
B.40117 x B.3337 ..	95	3	3	—	—
B.40164 x B.34104 ..	90	4	4	3	3
Co.281 x P.O.J.2878 ..	300	4	1	1	—
Co.421 x C.P.36–133 ..	120	2	2	—	—
C.H.64/21 x B.34104 ..	60	9	15	2	3
C.P.36–158 x B.34104 ..	116	13	11	4	3
Synthetic Kassoer x C.P.36–127	16	4	25	2	13
Totals	17,051	900		404	
Average per cent. field and final selections			5.3		2.4

As a result of this trial, it was decided not to repeat any of the following crosses, as the percentage of seedlings selected from their progenies is not sufficiently large:—

B.3353 x B.39175
B.3353 x B.39178
B.3353 x Co.290
B.3354 x B.37224
B.3354 x B.37261
B.3365 x B.39269
B.3365 x B.39274
B.3365 x Early Bascom
B.3439 x B.38279
B.34102 x Co.290
B.35197 x B.38281
B.35197 x Co.281
B.35218 x B.35187
B.35218 x B.39229
B.35247 x B.35187
B.35247 x P.O.J.2878
B.37161 x B.35187
B.37161 x B.40133
B.37161 x B.40255
B.37161 x C.P.31–517
B.37162 x B.3337
B.37266 x B.34104
B.38178 x B.34104
B.39253 x B.34104
B.4091 x P.O.J.2878
B.40105 x P.O.J.2878
B.40117 x B.3337
Co.281 x P.O.J. 2878

(v) PROGRESS WITH SEEDLINGS OF THE B.45′ SERIES

The 319 seedlings of the B.45′ Series were multiplied at Codrington in ten cane hole plots, and in October 1945 a further selection was made, the total being then reduced to 233. These seedlings were planted in the Central Sugar Cane Breeding Station Second Year Seedling Trials at the low rainfall station, Pine, and at the high rainfall stations, Bowmanston and Pool.

As in the previous years, the Second Year Trials were laid out in Groups, each Group consisting of eighteen seedlings and two standard varieties, each replicated three times.

In addition to the above, forty-three seedlings were sent to Groves for the breeding plots.

(vi) PROGRESS WITH SEEDLINGS OF THE B.44′ SERIES

These seedlings were planted in the Second Year Seedling Trials in October 1944 at the low rainfall stations—Codrington and The Home, and at the high rainfall stations—Todds and Bowmanston. These seedlings were reaped during the 1946 season. In all thirty-one seedlings were selected, two of which have been sent to the breeding plots at Groves, and the remaining twenty-nine will be sent to the Plant Quarantine Station for distribution to the contributing colonies, while fifteen will be included in the Third Year Seedling Trials to be planted in October, 1946.

The performance of the selected seedlings and the standard varieties are given in Tables IV. and V.

TABLE IV.

Central Sugar Cane Breeding Station Second Year Seedling Trials—B.44' Series. Codrington & Todds
Performances of Standards and Selected Seedlings (Figures are the means of three plots)

Codrington .. Harvested—7th to 12th March, 1946
Todds .. Harvested—1st to 4th April, 1946

Seedling	Parentage	Group	No of Canes per Plot (Rotten)		Percentage Arrowing		Z.H.R. Brix ($\bar{x}$ 4 canes/plot)		Weight—Tons cane per acre	
			Codrington	Todds	Codrington	Todds	Codrington	Todds	Codrington	Todds
B.37116 (a)	Standard	I	123(1)	101(5)	—	5	21.4	22.0	46.01	42.23
B.37161 (b)	Standard	„	103(0)	—	3	—	21.3	—	41.11	—
B.4098 ..	Standard	„	—	105(10)	—	66	—	21.8	—	41.19
B.4408 ..	B.3172 x B.34104	„	153(0)	147(19)	1	33	20.0	20.6	49.19	50.57
B.4409 ..	B.3353 x B.34104	„	153(1)	100(4)	5	46	19.5	22.1	54.87	41.88
B.4410 ..	B.3353 x B.34104	„	196(1)	157(23)	3	25	21.1	21.0	44.20	46.96
B.4411 ..	B.3353 x B.34104	„	161(0)	142(9)	10	58	23.4	22.9	41.19	49.10
B.37161 (a)	Standard	II	133(1)	115(3)	—	17	20.9	21.8	51.60	51.60
B.37161 (b)	Standard	„	106(2)	—	2	—	21.8	—	43.17	—
B.4098 ..	Standard	„	—	137(7)	—	51	—	21.4	—	48.68
B.4425 ..	B.3354 x B.37175	„	103(1)	108(12)	—	32	21.4	21.4	36.12	52.89
B.37161 (a)	Standard	III	122(2)	126(11)	—	14	21.4	21.9	41.71	47.13
B.37161 (b)	Standard	„	112(1)	—	—	—	21.1	—	51.51	—
B.4098 ..	Standard	„	—	113(5)	—	51	—	22.4	—	43.77
B.4448 ..	B.3439 x Co. 290	„	162(5)	209(4)	—	27	23.0	23.9	43.17	54.70
B.4466 ..	B.37161 x B.3337	„	138(1)	155(6)	1	30	20.6	22.3	38.87	52.20
B.4467 ..	B.37161 x B.3337	„	146(2)	128(2)	22	56	21.3	22.7	52.20	47.64
B.37161 (a)	Standard	IV	144(0)	134(7)	—	4	22.0	22.6	49.62	59.08
B.37161 (b)	Standard	„	118(0)	—	—	—	21.5	—	49.88	—
B.4098 ..	Standard	„	—	196(5)	—	70	—	23.9	—	76.88
B.4485 ..	B.37161 x B.3337	„	141(2)	147(4)	4	33	20.4	22.1	41.94	49.19
B.4487 ..	B.37161 x B.3337	„	189(2)	158(3)	—	14	19.7	20.4	46.61	56.33
B.4491 ..	B.37161 x B.3337	„	157(1)	164(0)	—	18	20.0	22.8	40.85	48.93
B.37161 (a)	Standard	V	119(1)	117(5)	2	11	22.1	21.7	53.15	47.04
B.37161 (b)	Standard	„	114(0)	—	—	—	22.7	—	44.38	—
B.4098 ..	Standard	„	—	145(10)	—	45	—	21.8	—	50.22
B.44101 ..	B.37161 x P.O.J. 2878	„	108(7)	160(12)	6	44	22.4	22.2	39.65	55.21
B.44109 ..	B.40272 x Co. 290	„	138(16)	121(13)	11	59	21.6	21.6	46.10	41.97
B.37161 (a)	Standard	VI	142(1)	98(10)	3	17	21.8	22.0	66.99	37.58
B.37161 (b)	Standard	„	129(2)	—	—	—	21.9	—	55.21	—
B.4098 ..	Standard	„	—	126(14)	—	51	—	22.3	—	42.14
B.44111 ..	B.40272 x Co. 290	„	130(4)	105(4)	—	51	23.1	23.0	55.04	45.06
B.44113 ..	B.40272 x Co. 290	„	161(4)	128(13)	1	47	21.3	21.5	52.80	43.12
B.44127 ..	P.O.J. 2878 x B.H. 10 (12)	„	124(2)	104(12)	2	24	22.3	21.1	46.18	47.30
B.37161 (a)	Standard	VII	134(0)	98(3)	19 (0)	13	21.9	22.2	61.83	40.85
B.37161 (b)	Standard	„	125(0)	—	—	—	22.9	—	48.13	—
B.4098 ..	Standard	„	—	147(7)	—	40	—	22.2	—	54.72
B.44150 ..	B.3354 x B.34104	„	110(2)	111(17)	3	48	21.7	22.6	41.19	45.06
B.37161 (a)	Standard	VIII	104(1)	122(3)	2	2	21.9	22.3	48.33	49.79
B.37161 (b)	Standard	„	132(0)	—	2	—	22.1		57.19	
B.4098 ..	Standard	„	—	149(6)	—	67	—	23.1		50.14
B.44165 ..	B.3354 x B.34104	„	155(7)	153(6)	9	38	22.3	25.2	50.20	44.55
B.44167 ..	B.3354 x B.35245	„	123(4)	119(12)	46	71	21.5	21.8	42.27	55.04
B.44177 ..	B.3354 x B.37175	„	70(3)	124(10)	—	65	20.1	22.1	30.10	47.99

TABLE V.

Central Sugar Cane Breeding Station Second Year Seedling Trials — B.44′ Series. The Home and Bowmanston Performances of Standards and Selected Seedlings (Figures are the means of three plots)

The Home — harvested:—29th & 30th January, & 20th & 21st February, 1946

Bowmanston—harvested:—25th to 28th March, 1946

Seedling	Parentage	Group	Mean No. of Canes per plot (rotten)		Percentage Arrowing		Z.H.R. Brix ($\bar{x}$ 4 canes/plot)		Weight—Tons cane per acre	
			The Home	Bowmanston	The Home	Bowmanston	The Home	Bowmanston	The Home	Bowmanston
B.37161 (a)	Standard	IX	94(0)	124(4)	—	16	22.5	21.6	39.46	49.02
B.37161 (b)	„	„	97(1)	—	1	—	22.1	—	42.43	—
B.4098 ..	„	„	—	142(5)	—	63	—	23.5	—	52.63
B.44182 ..	B.3354 x B.38270	„	131(5)	139(6)	54	37	20.5	21.6	41.34	41.45
B.37161 (a)	Standard	XI	86(3)	136(5)	3	11	21.3	21.5	39.74	47.73
B.37161 (b)	„	„	91(4)	—	2	—	21.9	—	44.74	—
B.4098 ..	„	„	—	125(7)	—	61	—	21.8	—	50.57
B.44244 ..	B.35207 x B.34104	„	134(7)	138(4)	23	37	22.5	21.5	37.15	48.25
B.44248 ..	B.35207 x P.O.J.2878	„	106(4)	122(15)	31	45	22.2	21.0	37.34	43.95
B.44254 ..	„ x „	„	126(9)	151(9)	10	10	20.2	20.7	52.22	45.24
B.37161 (a)	Standard	XII	92(1)	133(0)	—	7	21.6	22.0	36.39	53.15
B.37161 (b)	„	„	110(6)	—	—	—	22.1	—	48.86	—
B.4098 ..	„	„	—	153(5)	—	65	—	23.3	—	61.05
B.44261* ..	B.35261 x B.34104	„	128(3)	200(3)	22	58	20.2	22.4	24.25	41.80
B.44264* ..	„ x „	„	116(0)	138(2)	—	8	20.8	22.1	28.70	42.05
B.44269 ..	B.37161 x B.3337	„	127(2)	179(3)	3	38	20.6	20.6	38.98	52.55
B.44270 ..	„ x „	„	105(5)	169(5)	10	63	20.4	20.0	35.81	52.29
B.37161 (a)	Standard	XIII	115(0)	127(1)	1	10	22.5	21.8	44.35	49.54
B.37161 (b)	„	„	103(0)	—	3	—	22.5	—	42.05	—
B.4098 ..	„	„	—	143(8)	—	43	—	22.5	—	56.07
B.44278 ..	B.37161 x B.3337	„	135(2)	164(5)	14	69	21.1	21.1	35.42	45.24
B.44279 ..	„ x „	„	116(3)	142(3)	—	30	21.7	21.9	36.77	44.29
B.37161 (a)	Standard	XIV	72(2)	116(6)	—	7	20.9	21.9	25.82	54.44
B.37161 (b)	„	„	73(3)	—	—	—	20.6	—	31.78	—
B.4098 ..	„	„	—	150(6)	—	55	—	23.1	—	65.53
B.44305 ..	B.40272 x Co.290	„	129(1)	151(14)	76	60	22.7	21.6	37.25	45.41
B.37161 (a)	Standard	XVI	98(4)	131(3)	1	5	21.5	21.0	36.86	54.20
B.37161 (b)	„	„	93(6)	—	—	—	21.1	—	35.62	—
B.4098 ..	„	„	—	148(8)	—	59	—	23.1	—	52.80
B.44341 ..	B.40272 x Co.290	„	104(6)	161(1)	68	83	21.2	22.6	34.56	59.99

* For breeding plots only.

(vii) PROGRESS WITH SEEDLINGS OF THE B.43′ SERIES

These were reaped as plant canes in the Central Sugar Cane Breeding Station Second Year Seedling Trials at Codrington and at Cliff in 1945. The duplicate trial at Todds was burnt and could not be reaped while the duplicate trial at Codrington germinated so badly that it had to be replanted. Both of the two latter trials, together with the ratoon trial at Cliff were reaped in 1946. Of the forty-four tentative selections made in 1945 fourteen were discarded on a basis of their ratoon results, and two new selections were made, one of which was selected for the breeding plots only.

The performances of the standards together with the performances of the selected seedlings are given in Tables VI and VII.

TABLE VI.

Central Sugar Cane Breeding Station Second Year Seedling Trial—B.43′ Series

Todds — 1st Ratoons—Performances of Standards and Selected Seedlings
(Figures are the means of three plots)

Harvested:—1st to 4th April, 1946

Seedling	Parentage	Group	No. of canes per plot (rotten)	Percentage arrowing	Z.H.R. Brix (x 4 canes per plot)	Weight—tons cane per acre
B.37161	Standard	I	138 (8)	35	22.2	49.79
B.34104	Standard	„	191(14)	44	22.9	56.59
B.4306	B.35206 x P.O.J.2878	„	148(16)	38	23.2	44.29
B.37161	Standard	II	105(13)	19	21.8	44.55
B.34104	Standard	„	159(18)	56	23.3	48.33
B.4327		„	187(12)	62	22.7	42.93
B.4329		„	120(17)	47	19.8	47.39
B.37161	Standard	III	127(11)	23	21.9	44.30
B.34104	Standard	„	152(27)	24	22.8	41.11
B.4362		„	133(14)	40	24.3	35.00
B.37161	Standard	IV	111(15)	22	21.1	35.52
B.34104	Standard	„	180 (7)	42	22.9	42.14
B.4373		„	117(10)	67	23.1	32.18
B.4381		„	123(13)	35	23.3	38.44
B.37161	Standard	V	143(10)	15	20.9	47.39
B.34104	Standard	„	161(23)	42	22.0	38.10
B.43127		„	122(19)	58	20.7	36.98

TABLE VII.

Central Sugar Cane Breeding Station Second Year Seedling Trials—B.43' Series. Codrington and Cliff. Performances of the Standards and Selected Seedlings (Figures are the means of three plots)

Codrington .. Plant Canes .. Harvested:— 7th—12th March, 1946
Cliff .. 1st Ratoons .. Harvested:—15th—17th April, 1946

Seedling	Parentage	Group	Mean No. of Canes per plot (rotten)		Percentage Arrowing		Z.H.R. Brix (x 4 canes/plot)		Weight—Tons cane per acre	
			Codrington	Cliff	Codrington	Cliff	Codrington	Cliff	Codrington	Cliff
B.37161 (a)	Standard	IX	121(1)	124 (5)	64	39	22.8	23.3	44.74	45.58
B.37161 (b)	Standard	,,	120(7)	—	43	—	21.9	—	41.57	—
B.34104	Standard	,,	—	177(10)	—	42	—	24.5	—	45.67
B.43204	B.37227 x P.O.J.2878	,,	96(5)	128 (7)	84	53	22.1	23.7	25.63	35.86
B.43214	B.3353 x Co.290	,,	103(0)	150 (3)	72	76	21.7	24.1	34.08	43.34
B.43218	B.3354 x Co.290	,,	109(2)	163 (2)	65	51	22.7	24.1	32.35	43.52
B.43229	B.3365 x B.34104	,,	98(2)	98 (4)	—	—	24.3	26.5	30.34	35.00
B.37161 (a)	Standard	X	98(4)	112 (5)	58	25	22.6	22.6	34.66	36.55
B.37161 (b)	Standard	,,	94(2)	—	63	—	22.7	—	36.77	—
B.34104	Standard	,,	—	186 (8)	—	42	—	24.4	—	41.62
B.43234	B.3365 x B34104	,,	53(1)	111 (6)	22	59	22.6	22.2	22.46	35.78
B.43235	B.3365 x B.34104	,,	110(1)	130(17)	—	6	22.3	22.3	44.83	43.77
B.43253	B.3439 x B.37175	,,	119(1)	152 (1)	75	40	23.7	24.9	34.94	34.40
B.43254	B.3439 x Co.290	,,	128(6)	125 (9)	100	55	23.2	21.8	34.73	30.10
B.43255	B.3439 x Co.290	,,	136(2)	153 (9)	97	55	22.0	22.1	38.50	36.98
B.37161 (a)	Standard	XI	100(2)	125 (4)	33	35	22.2	22.5	34.37	45.15
B.37161 (b)	Standard	,,	97(1)	—	51	—	21.9	—	33.89	—
B.34104	Standard	,,	—	167(10)	—	42	—	23.5	—	44.98
B.43261	B.34102 x B.3337	,,	166(1)	187 (4)	58	15	21.6	22.2	29.86	38.44
B.43280	B.35197 x B.34104	,,	93()3	105 (0)	47	24	23.6	22.9	29.76	28.12
B.37161 (a)	Standard	XII	97(2)	97 (6)	43	10	22.1	21.3	39.74	37.07
B.37161 (b)	Standard	,,	103(1)	—	12	—	21.6	—	36.00	—
B.34104	Standard	,,	—	169(12)	—	34	—	22.4	—	42.57
B.43295	B.35197 x B.38285	,,	126(3)	194 (9)	43	24	21.2	22.9	35.90	36.98
B.37161 (a)	Standard	XIII	109(2)	117 (5)	62	32	21.8	23.2	35.90	41.02
B.37161 (b)	Standard	,,	86(2)	—	38	—	21.8	—	31.01	—
B.34104	Standard	,,	—	120 (4)	—	57	—	23.9	—	38.27
B.43330	B.35247 x B.3337	,,	142(0)	163(11)	16	44	20.9	22.0	37.82	41.02
B.37161 (a)	Standard	XIV	100(3)	121 (7)	64	7	21.1	23.1	38.11	38.01
B.37161 (b)	Standard	,,	116(5)	—	26	—	21.2	—	47.52	—
B.34104	Standard	,,	—	147(11)	—	30	—	23.5	—	37.50
B.43336	B.35247 x B.3337	,,	153(4)	203 (1)	43	28	21.7	23.2	33.89	38.87
B.43337	B.35247 x B.3337	,,	152(3)	234 (5)	24	20	20.9	21.7	46.37	55.47
B.43346	B.37227 x B.3337	,,	142(1)	196 (9)	74	47	21.0	21.7	32.06	39.04
B.43349	B.37227 x B.3337	,,	89(1)	125 (4)	67	42	20.3	21.7	26.50	38.18
B.43350	B.37227 x B.3337	,,	114(3)	163 (7)	86	58	21.4	23.1	33.60	35.43
B.37161 (a)	Standard	XV	94(4)	95 (1)	28	40	21.8	22.8	40.61	34.92
B.37161 (b)	Standard	,,	107(4)	—	44	—	21.6	—	39.46	—
B.34104	Standard	,,	—	178(14)	—	21	—	22.7	—	44.55
B.43380	B.35197 x Co.281	,,	114(3)	142 (5)	57	33	21.1	22.2	35.33	34.06
B.43388	B.35247 x B.3337	,,	136(2)	209 (3)	72	64	21.4	23.7	37.15	44.98
B.37161 (a)	Standard	XVI	99(2)	96 (2)	35	28	21.8	21.2	35.33	37.50
B.37161 (b)	Standard	,,	108(2)	—	41	—	21.4	—	38.78	—
B.34104	Standard	,,	—	176(12)	—	32	—	22.8	—	39.99
B.43389	B.35247 x B.3337	,,	139(0)	183 (5)	66	37	22.2	22.2	35.71	39.65
B.43391	B.35247 x B.3337	,,	143(1)	229 (3)	5	5	21.5	21.9	41.05	65.96
B.43398	B.35247 x B.3337	,,	145(2)	230 (7)	54	28	19.8	21.0	43.10	41.45
B.43403	B.35247 x P.O.J.2878	,,	116(2)	160(12)	21	30	21.7	22.4	33.79	43.69
B.43413	M.D.47 x Co.290	,,	100(1)	164 (8)	84	48	20.8	20.9	25.06	38.53

A new series of trials known as the Third Year Seedling Trials were planted in October and November 1945. The object of these trials is to sort out more easily and efficiently the large number of high quality seedlings which are now coming through from the Second Year Seedling Trials. Twenty-two seedilngs of the B.43′ Series were planted together with the standard varieties B.37161 and B.4098 in six trials, scattered over the main ecological areas of the island. Each variety is replicated six times, and it is proposed to take samples from two blocks of each trial for juice analyses, in addition to the usual data taken for the Second Year Seedling Trials.

(viii) SELECT SEEDLING AND CO-OPERATIVE VARIETY TRIALS

A. The Seedlings Tested

(1) *Select Seedling Trials*

Plant Canes	B.34104, B.37161, B.4097, B.4098, B.40105, B.40112, B.41211, B.41227, B.42304.
1st Ratoons	B.34104, B.37161, B.37193, B.4098, B.4110, B.41211, B.41227.
2nd Ratoons	B.34104, B.37161, B.4098, B.40105.

(2) *Co-operative Variety Trials*

1st Ratoons	B.H.10(12), B.3439, B.34104, B.37161.

B. An Ecological Classification of the Trials.

The classification is similar to that used in recent years and is as follows:—

(a) Black coral limestone soils, where the average seasonal rainfall is low. On account of low rainfall, ratooning is difficult, and cane tonnages are usually low. Stations in this category were:—

Select Seedling Trials

Plant Canes .. .. Ealing Grove and Bromefield.

(b) Black coral limestone soils of low to intermediate rainfall. On account of better rainfall than category (a), a certain amount of ratooning is practised. The extent of ratooning is increasing as stronger ratooning varieties become available. The stations in this category were:—

Select Seedling Trials

Plant Canes	Portland and Halton
First Ratoons	Searles

(c) Valley deep black coral limestone soil area, with low to intermediate rainfall. This area may suffer periodic water-logging. Soils, especially sub-soils, tend to a heavy texture, and root diseases are commonest here. Varieties resistant to the root disease complex are therefore necessary. A considerable percentage of this area is ratooned. Stations in this category were:—

Select Seedling Trials

First Ratoons .. .. Carrington

(d) Red coral limestone area with intermediate to high rainfall. One to four ratoon crops are grown here. The stations in this category were:—

(1) *Select Seedling Trials*

Plant Canes	.. ..	Andrews and Pool
First Ratoons	.. ..	Haggatts, Fisherpond and Rugby
Second Ratoons	..	Clifton Hall.

(2) *Co-operative Variety Trials*

First Ratoons	.. ..	Easy Hall

(e) Sandy coral limestone soils where the average annual rainfall is low t intermediate. These soils on account of their compartively light texture are liable to dry out rapidly.

(1) *Select Seedling Trials*

First Ratoons	.. ..	Alleynedale
Second Ratoons	..	Alleynedale

(2) *Co-operative Variety Trials*

First Ratoons	.. ..	Six Mens and Sandy Lane.

TABLE VIII.

C. RAINFALL DURING THE SEASONS

Month	1920—21 to 1939—40	1940—41	1941—42	1942—43	1943—44	1944—45	1945—46
January	3.33	2.32	1.46	2.17	2.83	1.48	0.84
February	1.96	0.44	0.48	1.72	1.08	1.25	1.28
March	1.58	5.46	1.50	1.07	2.68	0.94	0.59
April	1.61	0.56	1.55	4.10	2.24	2.01	4.96
May	1.93	1.11	1.91	1.06	4.31	6.64	6.37
June	4.41	2.54	3.02	4.23	4.03	3.44	5.33
July	6.31	5.50	4.72	7.41	3.74	12.00	5.38
August	6.24	6.50	5.11	4.63	4.78	7.41	10.29
September	7.22	6.17	10.08	5.55	5.82	9.28	7.62
October	7.55	6.07	8.15	6.91	10.75	10.35	4.57
November	9.46	7.18	7.61	9.81	7.19	8.96	6.89
December	4.09	1.89	3.40	4.64	7.94	5.57	2.55
January	3.29	1.46	2.17	2.83	1.48	0.84	4.03
February	1.86	0.48	1.72	1.08	1.25	1.28	2.12
March	1.73	1.50	1.07	2.68	0.94	0.59	0.78
Totals	62.57	49.18	53.95	59.89	61.06	72.04	63.60

D. Results of the Trials

In the Select Seedling Plant Cane Trials, the following data are obtained:—(1) cane tonnage, (2) number of rotten canes per plot, (3) complete cane chemical analysis from plot sample bundles and so (4) a calculated sucrose yield per acre.

N.B.—Owing to a shortage of equipment and trained staff, it was decided to take sample bundles from two blocks only.

In the Select Seedling Ratoon Trials, cane tonnages, Zeiss Hand Refractometer Brix readings and the number of rotten canes per plot are obtained.

In the Co-operative Variety Trials, cane tonnages and Zeiss Hand Refractometer Brix readings only are obtained.

The results obtained from the several categories are considered here.

CATEGORY A.

The results are given in Table IX.

Table IX.

Select Seedling Trials — Plant Canes

Estates and Dates of Harvesting .. {Ealing Grove — 1st March, 1946
{Bromefield — 14th March, 1946

Variety	Cane — Tons per acre		Per cent sucrose in cane		Quotient of purity		Sugar — Tons per acre		No. of rotten canes per plot	
	Ealing Grove	Brome-field	Ealing Grove	Brome-field	Ealing Grove	Brome-field	Ealing Grove	Brome-field	Ealing Grove	Brome-field
B.34104	28.46	27.20	17.2	18.7	87.0	92.3	4.93	5.09	9	17
B.37161	33.46	35.45	17.2	17.1	94.0	91.5	7.75	6.05	7	5
B.4098	33.14	36.64	17.6	17.3	88.8	87.8	5.76	6.34	5	9
B.40105	35.90	31.70	17.0	18.5	91.4	93.1	6.11	5.81	7	11
B.40112	27.15	29.77	17.1	17.7	90.9	91.9	4.65	5.27	32	45
B.41211	35.68	40.83	16.2	16.6	84.9	87.5	5.78	6.78	3	12
B.41227	34.62	34.03	16.9	18.6	88.4	91.4	5.85	6.32	9	23
B.42304	—	21.52	—	18.3	—	92.7	—	3.94	—	14

The following differences may be considered significant:—

	Sugar	Cane
Ealing Grove	$\pm$ 0.86 tons per acre	$\pm$ 4.64 tons per acre
Bromefield	$\pm$ 0.52 tons per acre	$\pm$ 2.86 tons per acre

At Ealing Grove the variety B.40105 gave the heaviest yields of cane and sugar. It was not however significantly better than B.37161, B.4098, B.41211 and B.41227. All of these varieties were significantly better than B.34104 and B.40112 on cane yield and better than B.40112 on yield of sugar. B.40105 and B.41227 were significantly better than B.34104 on yield of sugar.

At Bromefield the variety B.41211 was outstanding, significantly outyielding all other varieties on cane and all but B.4098 and B.41227 on sugar. There were no significant differences between the mean yields of B.37161, B.4098 and B.41227, both as regards cane and sugar. B.37161 and B.4098 exceeded B.34104, B.40105, B.40112 and B.42304 on cane and all but B.40105 on sugar. All varieties significantly and greatly exceeded B.42304 on yield of cane and sugar.

CATEGORY B.

The results are given in Tables X and XI.

Table X

Select Seedling Trials — Plant Canes

Estates and Dates of Harvesting .. { Halton — 15th March, 1946
Portland — 7th March, 1946

Variety	Cane — Tons per acre		Per cent sucrose in cane		Quotient of purity		Sugar — Tons per acre		No. of rotten canes per plot	
	Halton	Portland	Halton	Portland	Halton	Portland	Halton	Portland	Halton	Portland
B.34104	27.28	36.29	17.8	16.5	93.9	91.8	4.86	5.98	63	7
B.37161	39.97	48.08	16.7	15.8	93.0	92.4	6.68	7.60	15	9
B.4098	38.51	40.72	17.2	15.3	90.4	88.6	6.61	6.42	11	13
B.40105	38.16	36.62	16.6	16.2	90.6	90.1	6.33	5.92	18	12
B.40112	32.56	—	17.3	—	93.2	—	5.63	—	45	—
B.41211	29.72	45.60	16.2	15.4	88.6	89.2	4.81	7.03	179	5
B.41227	40.82	44.62	17.5	16.5	90.0	90.6	7.15	7.37	19	20
B.42304	25.52	—	17.8	—	94.6	—	4.54	—	13	—

The following differences between mean yields may be considered significant:—

	Sugar	Cane
Halton	± 0.78 tons per acre	± 4.17 tons per acre
Portland	± 0.67 tons per acre	± 2.55 tons per acre

Table XI

Select Seedling Trials — First Ratoons
Searles — Harvested 28th January, 1946.

Variety	Cane — Tons per acre		Z. H. R. Brix		Rotten canes per plot	
	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.
B.37161	38.98	37.93	21.2	22.4	—	—
B.37193	—	36.11	—	21.6	—	—
B.4098	—	45.96	—	22.8	—	—
B.41211	36.29	—	20.4	—	—	—
B.41227	—	42.35	—	22.4	—	—

The following differences between mean yields may be considered significant:—

Group I $\pm$ 0.80 tons cane per acre

Group II $\pm$ 4.80 tons cane per acre

At Halton B.41227 gave the highest yield of cane, but this was not significantly better than B.37161, B.4098 or B.40105. All of these varieties were significantly better than the remainder. The variety B.40112 significantly exceeded B.34104 and B.42304 on cane yield. The variety B.41211 is a very soft cane, and suffered severely from damage by rats.

B.41227 also gave the heaviest yield of sugar at this station, but was not significantly better than B.37161 and B.4098. Both of these latter varieties were significantly better than the remainder with the exception of B.40105, which in turn was significantly better than B.41211 and B.42304.

At Portland the variety B.37161 exceeded all others on yield of cane and sugar. However, the differences between the mean yields of this variety and those of B.41211 and B. 41227 are not statistically significant. All three of these varieties were significantly better than the other varieties tested on cane yield, while B.4098 was significantly better than B.34104 and B.40105.

The varieties B.37161 and B.41227 were significantly better than B.4098, B.40105 and B.34104 on sugar yield, while B.41211 and B.4098 were better than B.40105 and B.34104.

In the First Ratoon Trial at Searles B.37161 was significantly better than B.41211 on cane yield, in Group I.

In Group II, B.4098 was outstanding. However the difference between the mean yield of this variety and that of B.41227 was not significant. B. 41227 exceeded B.37193 significantly.

CATEGORY C

The results are given in Table XII.

TABLE XII

Select Seedling Trial — First Ratoons

Carrington — Harvested 22nd March, 1946

Variety	Cane — Tons per acre		Z. H. R. Brix		Rotten canes per plot	
	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.
B.37161	23.75	25.15	22.3	22.1	7	5
B.4098	—	23.85	—	24.3	—	—
B.4110	20.22	—	23.0	—	16	2
B.41211	24.44	—	22.5	—	5	6
B.41227	—	27.94	—	23.1	—	—

The differences between mean yields are insignificant in both Groups.

In Group I, B.41211 gave the highest and B.4110 the lowest yield. There was little to choose between the juice qualities of the various varieties.

In Group II, B.41227 gave the highest and B.4098 the lowest yield. B.4098 had the juice of highest quality and B.37161 the juice of poorest quality.

CATEGORY D

The results are given in Tables XIII, XIV, XV and XVI.

Table XIII

Select Seedling Trials — Plant Canes

Estates and Dates of Harvesting .. {Pool — 30th March, 1946
{Andrews — 22nd March, 1946

Variety	Cane — Tons per acre		Per cent sucrose in cane		Quotient of purity		Sucrose — Tons per acre		No. of rotten canes per plot	
	Pool	Andrews	Pool	Andrews	Pool	Andrews	Pool	Andrews	Pool	Andrews
B.34104 ..	40.03	46.34	16.0	16.1	90.8	93.0	6.41	7.46	47	28
B.37161 ..	41.76	51.22	16.5	15.5	91.7	93.4	6.89	7.94	28	20
B.4097 ..	32.23	—	15.9	—	91.2	—	5.11	—	23	—
B.4098 ..	41.81	50.03	15.2	15.8	88.5	91.1	6.35	7.91	12	20
B.40105 ..	38.84	—	16.3	—	90.7	—	6.33	—	33	—
B.41211 ..	30.29*	48.91	15.2	15.7	87.2	90.0	4.61	7.66	176	112
B.41227 ..	48.65	54.79	17.1	15.8	89.9	91.1	8.30	8.65	65	48
B.42304 ..	—	36.49	—	16.3	—	93.2	—	5.94	—	25

*A very great amount of damage was caused by rats in the plots of this variety.

The following differences between mean yields may be considered significant:—

	Sugar	Cane
Pool	± 0.65 tons per acre	± 4.05 tons per acre
Andrews	± 0.95 tons per acre	± 5.83 tons per acre

TABLE

Select Seedling Tri

Estates and Dates of Harvesting:—

Variety	Cane — Tons per acre								
	Rugby		Fisherpond		Haggatts		Rugby		
	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.	Grou
B.34104 ..	—	—	—	—	27.51	27.40	—	—	
B.37161 ..	38.08	39.21	41.16	41.01	28.80	32.36	22.7	21.9	20.
B.4098 ..	—	42.00	—	40.76	—	38.95	—	21.7	
B.4110 ..	34.95	—	37.63	—	25.38	—	23.0	—	20.
B.41211 ..	39.42	—	47.58	—	30.75	—	22.8	—	21.
B.41227 ..	—	43.28	—	44.02	—	33.14	—	21.1	

The following differences between mean yields may be considered significant:—

XIV

ds — Plant Canes

(Rugby — 11th April, 1946
(Fisherpond — 21st March, 1946
(Haggatts — 29th and 30th April, 1946.

Z. H. R. Brix				Rotten canes per plot					
Fisherpond		Haggatts		Rugby		Fisherpond		Haggatts	
I.	Group II.	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.
—	—	23.6	22.0	—	—	—	—	46	64
9	20.9	22.1	22.7	8	11	13	10	29	13
—	21.5	—	22.0	—	13	—	13	—	12
0	—	22.8	—	11	—	12	—	19	—
5	—	22.6	—	10	—	9	—	42	—
—	21.6	—	20.5	—	15	—	10	—	84

	Group I.	*Group II.*
Rugby	Insignificant	Insignificant
Fisherpond	± 5.29 tons per acre	± 1.38 tons per acre
Haggatts	Insignificant	± 5.64 tons per acre

TABLE XV

Select Seedling Trial — Second Ratoons

Clifton Hall. Harvested:— 12th April, 1946

Variety	Cane — Tons per acre		Z. H. R. Brix		Rotten canes per plot	
	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.
B.34104 ..	53.89	44.80	22.0	21.4	42	22
B.37161 ..	—	46.89	—	21.3	—	14
B.4098 ..	52.19	53.29	22.0	21.7	33	13
B.40105 ..	24.62	—	22.7	—	29	—

The following differences between mean yields may be considered significant:—

Group I $\pm$ 5.94 Tons cane per acre.

Group II $\pm$ 7.58 Tons cane per acre.

TABLE XVI

Co-operative Variety Trial — First Ratoons

Easy Hall — Harvested 22nd March, 1946

Variety	Cane — Tons per acre	Z. H. R. Brix
B.H.10(12)	31.13	19.5
B.34104 ..	39.74	22.6
B.37161 ..	38.75	21.5

A difference between mean yields of 6.22 tons cane per acre may be considered significant.

In the Select Seedling Plant Cane Trials at Pool, the variety B.41227 was outstanding, significantly outyielding all others on cane and sugar. There was little to choose between B.4098, B.37161, B.34104 and B.40105 all of which were superior to B.4097 and B.41211 on cane and sugar. The variety B.41211 suffered severe damage from rats in this trial.

At Andrews, B.41227 was again outstanding giving the heaviest yields of cane and sugar. It was however not significantly better than B.37161 or B.4098. There was little to choose between the varieties B.34104 and B.41211. All varieties significantly and greatly exceeded the variety B.42304.

In the Select Seedling First Ratoon Trial at Rugby, B.41211, B.4098 and B.41227 exceeded B.37161 on cane yield. The differences however were not statistically significant. There was little to choose between the juices of the various varieties in the two groups. At Fisherpond, B.41211 in Group I and B.41227 in Group II significantly exceeded the standard variety B.37161 on cane yield. Apart from B.4110, there was little to choose between the juices of the varieties in both groups. At Haggatts, B.41211 gave the greatest and B.4110 the smallest yield of

cane in Group I. The differences between the mean yields, however, failed to be significant. B.34104 gave juice of the highest quality, B.37161 juice of lowest quality. There was little to choose between the juice qualities of B.4110 and B.41211. In Group II, B.4098 was outstanding, significantly outyielding all other varieties tried. B.41227 was second, significantly outyielding B.34104. The difference between the mean yields of B.37161 and B.34104 just failed to be significant. B.37161 gave the juice of highest and B.41227 that of lowest quality. There was nothing to choose between the juice qualities of B.34104 and B.4098.

In the Select Seedling Second Ratoon Trials at Clifton Hall, B.34104 and B.4098 significantly and very greatly exceeded B.40105 in Group I. There was nothing to choose between the juice qualities of the two former varieties. In Group II, the variety B.4098 significantly outyielded B.34104, but just failed to beat B.37161 significantly. There was little to choose between the juice qualities of the three varieties.

In the Co-operative Variety First Ratoon Trial at Easy Hall, B.34104 and B.37161 significantly outyielded B.H.10(12) on yield of first ratoon cane. B.34104 gave the juice of highest and B.H.10(12) juice of lowest quality.

CATEGORY E.

The results are given in Tables XVII, XVIII and XIX.

Table XVII

Select Seedling Trials — First Ratoons

Alleynedale — Harvested 1st February, 1946

Variety	Cane — Tons per acre		Z. H. R. Brix		No. rotten canes per plot	
	Group I.	Group II.	Group I.	Group II	Group I.	Group II.
B.34104 ..	33.32	—	23.2	—	6	—
B.37161 ..	35.59	40.50	21.6	21.9	3	3
B.37193 ..	—	32.24	—	21.3	—	5
B.41211 ..	35.85	—	20.7	—	6	3
B.41227 ..	—	42.66	—	21.7	—	—

The following differences between mean yields may be considered significant:—

Group I Insignificant

Group II $\pm$ 8.51 Tons cane per acre

Table XVIII

Select Seedling Trial — Second Ratoons

Alleynedale — Harvested 1st February, 1946

Variety	Cane — Tons per acre		Z. H. R. Brix		No. rotten canes per plot	
	Group I.	Group II.	Group I.	Group II.	Group I.	Group II.
B.34104 ..	27.98	30.35	20.7	22.1	2	5
B.37161 ..	25.32	27.89	20.1	20.6	2	1
B.4098 ..	32.50	34.04	21.5	20.8	3	4
B.40105 ..	—	29.23	—	21.1	—	—

The differences between mean yields in both Groups failed to be significant.

TABLE XIX

Co-operative Variety Trials — First Ratoons

Estates and Dates of Harvesting:— {Six Mens, 20th March, 1946
{Sandy Lane, 8th May, 1946.

Variety	Cane — Tons per acre		Z. H. R. Brix	
	Six Mens	Sandy Lane	Six mens	Sandy Lane
B.3439	23.79	24.73	22.1	23.9
B.34104	26.03	31.89	23.3	23.3
B.37161	28.68	32.39	22.1	22.4

The following differences between mean yields may be considered significant:—

Six Mens — Insignificant

Sandy Lane — $\pm$ 5.06 tons cane per acre.

In the Select Seedling First Ratoon Trial at Alleynedale, Table XVII, B.41211 gave the heaviest yield of cane in Group I. It was, however, not significantly better than B.37161. B.34104 gave the juice of highest, and B.41211 the juice of lowest quality. In Group II B.41227 gave the heaviest yield of cane but was not significantly better than B.37161. B.37161 just failed to be significantly better than B.37193. There was little to choose between the juice qualities of B.37161 and B.41227, both of which were better than B.37193.

In the Select Seedling Second Ratoon Trials, Table XVIII, B.4098 gave the highest and B.37161 the lowest yield of cane in Group I. The differences between mean yields failed to be significant. B.4098 gave juice of the highest and B.37161 juice of lowest quality. In Group II B.4098 gave the highest and B.37161 the lowest yield of cane. Here again the differences between mean yields was insignificant. B.34104 gave the juice of highest quality. There was little to choose between the juice qualities of B.37161 and B.4098, both of which were poorer than the juice of B.40105.

In the Co-operative Variety First Ratoon Trials, Table XIX, B.37161 gave the highest and B.3439 the lowest yield of ratoon cane at both stations. At Six Mens, the differences between mean yields failed to be significant. At Six Mens, B.34104 gave the juice of highest quality. There was nothing to choose between the juices of B.3439 and B.37161. At Sandy Lane, B.3439 gave the best juice, followed by B.34104.

GENERAL

The main feature of the Select Seedling Trials is the outstanding performance of B.41227 both as a plant cane and as a ratoon. This variety arrowed very profusely as a plant cane when it was reaped in the 1945 crop, and as it does not produce side shoots after arrowing, a very large number of dried canes were found in the plots. In spite of this cane yields were very heavy. During the past season it arrowed sparingly, and few rotten or dried canes were found. Yields were consequently very good, and the sucrose in cane very high. It is felt that further information regarding its arrowing propensity is necessary before it can be recommended for commercial planting under Barbados conditions.

The variety B.4098 performed very well in all categories, and has already been recommended for commercial planting on a limited scale in Barbados. The results obtained merely tend to confirm these recommendations.

B.41211 is an early cane, which is very soft, and subject to severe damage by rats. It does particularly well in the low rainfall areas as a plant cane provided rats are not prevalent. Like B.41227, it is felt that further information is necessary before any definite recommendations can be made.

The only seedling of the B.42' Series tested, B.42304 was badly outclassed, and will not be tested further in Barbados.

III. DESPATCH OF SEEDLINGS TO THE PLANT QUARANTINE STATION

During the year under review, the following seedlings were sent to the Plant Quarantine Station in Trinidad:—

A. FOR EVENTUAL DISTRIBUTION TO ALL CONTRIBUTING COLONIES

B.4306	B.43214	B.43255
B.4327	B.43218	B.43295
B.4362	B.43229	B.43330
B.4363	B.43234	B.43337
B.4380	B.43235	B.43391
B.4381	B.43253	B.43398
B.43139	B.43254	B.43403
B.43413		

B. FOR JAMAICA AND BRITISH GUIANA ONLY

B.4373	B.43133	B.43290
B.4374	B.43283	B.43346

Of this list it is probable that the seedlings B.4362, B.43235, B.43337 and B43391 are outstanding, although it is premature at this stage to forecast the performance of any of the seedlings listed.

IV. PERFORMANCES OF SEEDLINGS IN CONTRIBUTING COLONIES

BARBADOS

By the Sugar Cane Census Act, 1937, (1937-31) all plantations, (i.e. units of more than ten acres of arable land) are required during the month of September of any year to make a return giving the acreage of cane to be reaped during the subsequent crop and the acreage under each variety. Precise variety acreage figures are therefore available from plantations from the 1938 to the 1946 crop inclusive. Figures are also available for the 1936 and 1937 crops from voluntary returns which actually comprise almost 90 per cent of plantation canes in those years. The trend in the varietal situation can therefore be seen from the table below:—

CROP YEAR

Variety	1934–1936	1935–1937	1936–1938	1937–1939	1938–1940	1939–1941	1940–1942	1941–1943	1942–1944	1943–1945	1944–1946
B.H.10 (12)	29.27	28.28	27.23	25.97	23.15	22.16	19.81	12.69	8.00	4.79	3.19
B.726	29.82	27.64	26.74	21.98	19.48	17.33	15.64	9.58	4.79	2.96	2.02
B.2935	29.19	38.24	39.30	42.10	43.01	45.66	42.45	20.95	4.73	1.92	0.68
Ba.11569	8.18	3.10				—	—	—	—	—	—
B.891	1.32	0.37				—	—	—	—	—	—
Mixed	2.22	1.28	2.91	2.09	3.90	2.97	2.90	3.45	3.79	1.25	1.09
B.3013		0.64	3.82	6.98	8.26	8.58	8.42	—	2.90	1.38	0.52
B.417		0.20				—	—	—	—	—	—
B.381		0.25				—	—	8.35	—	—	—
B.3127				0.88	2.20	3.30	3.33	5.84	—	—	—
B.3439						—	3.60	—	9.49	4.93	2.40
B.37161						—	1.48	26.77	48.69	62.70	74.52
B.35187						—	2.37	10.19	11.28	10.22	6.09
B.35245						—	—	1.85	2.06	1.58	0.67
B.34104						—	—	0.33	4.19	7.41	6.89
B.4098						—	—	—	—	0.33	1.56
*Other Varieties						—	—	—	—	0.53	0.37
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*B.3127, B.3419, B.37193, B.38155, B.4096, B.40102, B.40105, B.4145, B.41211, B.41221, B.41227.

The rapid and continued rise of B.37161 since it first appeared in the 1940-42 crop year is perhaps unequalled in the history of any cane growing country. This variety is certainly suited to the ecological conditions obtaining in Barbados and the planters have not been slow to realise its worth. However, B.37161 has one great disadvantage in that it holds its trash very strongly and with present labour difficulties it will not be surprising if its place is taken in the near future by a variety which sheds its trash more readily.

The variety B.4098 has been recommended for commercial planting from 5% in the low rainfall to 30% in the high rainfall areas. This cane will probably be planted on an increasing scale, but there can be no doubt that planters will be slow to give up B.37161, which has served them well in the past, unless a very much better variety is available.

The performances of B.41211 and B.41227 under Barbados conditions have been very variable although quite good on the whole. However, it is felt that more information relative to the performance of these varieties should be available before any definite recommendations for commercial planting can be made.

The varieties B.4362, B.43235, B.43337 and B.43391 have shown some promise for Barbados conditions.

TRINIDAD

The table below gives a list of the varieties planted in Trinidad during the period 1941-46, together with the percentage of the total area occupied by each:—

Variety	1941	1942	1943	1944	1945	1946
Barbados						
B.H.10(12) ..	56.16	58.16	48.47	51.45	20.91	10.77
B.726 ..	2.92	1.49	1.32	1.02	0.65	0.08
B.3439 ..	0.38	1.00	4.05	5.64	4.44	3.14
B.34104 ..	0.02	0.78	8.15	17.58	24.30	37.98
B.3337 ..	—	—	—	2.43	7.01	10.55
B.37161 ..	—	—	—	—	—	1.33
B.37172 ..	—	—	—	—	—	1.24
Others ..	0.47	0.50	0.83	0.80	1.25	0.29
Coimbatore						
Co.213 ..	16.99	23.01	24.37	29.10	28.52	23.83
Co.290 ..	0.95	0.18	0.07	0.02	—	—
Co.419 ..	0.05	0.45	1.85	1.53	1.27	0.65
Co.421 ..	—	—	—	—	1.68	1.42
Co.432 ..	—	—	—	—	—	0.06
Others ..	0.02	0.03	0.74	1.44	0.10	—
Java						
P.O.J.2878 ..	1.61	2.22	2.23	1.58	1.70	1.26
P.O.J.213 ..	1.56	0.61	0.49	0.77	0.35	0.09
P.O.J.36 ..	0.03	0.02	0.04	—	—	—
Others ..	0.01	—	—	—	—	—

TABLE *(Continued)*

VARIETY	1941	1942	1943	1944	1945	1946
Puerto Rico						
F.C.916 ..	0.61	0.12	0.66	0.17	0.05	0.01
Others ..	0.01	0.06	0.21	0.12	0.15	0.08
British Guiana						
Diamond 10 ..	0.11	0.10	0.11	—	—	—
Others ..	0.01	0.01	—		—	—
Elsewhere				—		
Uba	17.42	10.03	4.17	1.66	6.30	3.30
Others ..	—	0.01	—	—	—	—
Mixed Varieties						
B.H.10(12) ..	0.65	1.20	2.24	4.68	1.32	3.86

From this table it will be seen that B.34104 has continued to expand, chiefly at the expense of B.H.10(12). The acreage under B.3439 has been reduced somewhat and there can be no doubt that this variety will go out of cultivation in the near future. The acreage under B.3337 has continued to expand, while the varieties B.37161 and B.37172 appear in the table for the first time. It has recently been reported that B.37161 shows some resistance to froghopper attack, and there can be little doubt that the acreage under this variety will expand very rapidly in the near future.

Labour conditions in Trinidad have caused considerable delay in the testing programme, which has resulted in the delayed testing of all seedlings of the B.39 and following series. The seedlings B.4098, B.41211 and B.41227 have done well in Barbados, and may also prove to be outstanding in Trinidad.

The following planting recommendations have been given for Trinidad:—

"The varieties B.3337 and B.34104 are already in extensive cultivation. When planted early in the wet season on light soils of the flat areas with fairly uniform texture down the profile, B.34104 can give excellent yields. When planted towards the end of the wet season however, this variety usually suffers severely from drought in the dry season following planting. B.37172 could profitably be used for this late planting. This variety has a strong tendency to uproot. How this will affect its yield as ratoons on a commercial scale is not yet definitely known and it is suggested that planting of this variety should be confined, if possible to loams with a fairly uniform texture down the profile and on clay soils with structure.

"B.37161 could profitably be widely extended in the Naparimas and possibly on structureless heavy clays of the flat areas.

"There have been conflicting reports of the juice qualities of B.3337. So far it seems well suited to light soils with a distinct shortage of moisture during the dry season, provided it is planted early in the wet season.

"The variety B.37193 should be extended to a small extent in bad froghopper areas, in order to ascertain its resistance to and recovery from froghopper blight."

ANTIGUA

In Antigua during the past crop, the variety B.4098 was reaped for the first time in formal trials. It was included in nine variety trials scattered over all the main soil types of the island. In eight of these trials it beat all of the other varieties tried, and very often by wide margins, while in the ninth trial it was beaten by B.40102, B.40105 and B.37161 on cane yield, but with B.37161 gave the heaviest yield of sugar. This result is most encouraging, and in view of its good ratooning qualities in Barbados, the Agricultural Superintendent, Antigua, has been advised to recommend the planting of B.4098 on a scale sufficient to enable rapid extension of the variety, should ratooning there prove to be satisfactory.

Apart from B.4098, B.37161, B.34104 and B.37172 performed well, particularly the former. B.37172 appears to favour certain soil types, while B.37161 performs well on all types. B.34104 invariably gives a lower cane yield than B.37161 and B.37172, but its excellent juice quality invariably puts it up among the winners on sugar yield. In the ratoon experiments B.34104, B.37161 and B.37172 are almost invariably at the head of the list, while an occasional good performance is turned in by B.3337 and B.37194.

The varieties reaped in Antigua in the 1946 crop together with the percentage of the total area occupied by each are given in the table below:

Variety	Percentage
B.34104	45.91
B.37161	17.70
B.3439	32.13
B.37172	0.31
B.39177	0.07
B.4098	0.06
Others	3.82

Planting recommendations of the Sugar Agronomist for the 1946-48 crop are as follows:—

Soil Type	Percentage of Total Area		
	B.34104	B.37161	B.37172
Wetherell Clay	100%	—	—
Fitches Clay	—	100%	—
W. F. Transition	—	100%	—
Lighter soils of Blubber Valley Series ..	30%	30%	40%
Gunthorpe Clay	30%	60%	10%
Tomlinson Clay	20%	60%	20%
Lindsey Clay	—	90%	10%
Otto Clay	25%	50%	25%
Bendal Clay	25%	25%	50%
Heavier soils of the Blubber Valley Series	30%	30%	40%

ST. KITTS

The trials in St. Kitts included varieties up to and including seedlings of the B.40' Series. Generally speaking, B.37161 performed best of all the varieties tried in all ecological categories. B.34104 performed well. and also gave juice of very high sucrose content. B.4098 was included in five plant cane trials, but its performance was very erratic and in most cases disappointing. In one trial in the Wet Upper Lands, it was reported to have uprooted and have shown signs of drying out at harvest

In the ratoon trials, B.37161 and B.34104 were outstanding. B.38212 performed well in the only trial in which it was included, coming a very close second to B. 37161 on yield of cane, but having an appreciably better juice quality.

The varieties reaped during the 1946 crop together with the percentage of the total area occupied by each are given in the table below:—

Variety	Percentage of Total Area
B.H.10 (12)	6.98
B.2935	9.70
B.3013	0.10
B.3439	6.02
B.34104	7.74
B.35187	7.70
B.37161	56.96
B.4098	0.10
Mixed	4.70
	100.00

The planting recommendations of the Sugar Agronomist for St. Kitts for the 1946 planting season are as follows:—

Drier Lower Lands

Until further information is available with respect to newer varieties, it is recommended that B.3439 should be grown on those areas of the drier lower lands which are to be reaped both as plants and ratoons during the first month of the crop season. B.37161 should be planted for reaping during the remaining months of the crop season. B.37161 should also be planted in all areas where B. 3439 is known to uproot, whether reaping is to be early or late.

Lower Lands of Intermediate Rainfall

Until further information is available, the lower lands of intermediate rainfall should be planted mainly in B.37161. As the middle lands are approached, this variety should be replaced to some extent by B.34104.

Middle Lands of Intermediate Rainfall

Until further information is available it is recommended that the middle lands of intermediate rainfall should be planted mainly in B.37161. Some B.34104 should be planted in areas with a deep topsoil where arrowing is least likely to limit cane growth. Some B.35187 may also be planted in this area.

Wetter Middle Lands

It is recommended that the wetter middle lands should be planted mainly in B.37161. Some B.34104 might be planted in areas with a deep topsoil where arrowing is least likely to limit cane growth. Small areas might also be planted in B.38212.

Drier Upper Lands

Until further information is available, B.37161 should be planted as the main crop. Some B.34104 might be planted on fields with a deep topsoil where arrowing is least likely to limit cane growth.

Wetter Upper Lands

Until further information is available, both B.37161 and B.34104 should be planted on the wetter upper lands. The planting of B.35187 is not recommended except on a very small scale.

BRITISH GUIANA

So far, the only variety produced by the Station which has been fairly well tested is B.34104. This variety has performed well, and has been included in commercial plantings in most estates in British Guiana.

The varieties B.3337, B.3439, B.35187, B.41211, B.37193 and B.37161 have now been included in formal trials, and it will be possible in a few years to tell whether any of these varieties are worth planting on a commercial scale. Of the seedlings still undergoing multiplication, B.40102 and B.41227 are stated to be very promising, while B.40105, B.4110, B. 4145, B.42114, and a number of seedlings of the B.43 Series are stated to be promising or worth testing.

JAMAICA

A survey of the variety situation in Jamaica which has recently come to hand shows that for the 1946 crop, varieties produced by the Station occupied 71% of the area under cane. The table which covers the years 1941-1946 is given below:—

Varieties Per Cent. Total Acreage

Variety	1941	1942	1943	1944	1945	1946
B.3439	—	2	12	26	16	17
B.34104	—	—	3	12	33	50
B.37161	—	—	—	—		1
B.37172	—	—	—	—		3
B.H.10(12)	42	42	34	24	21	11
E.K.28	4	1	1		—	—
F.C.916	—	4	2	3	3	—
M.28	3	2	3	2	3	2
P.O.J.2727	12	7	5	1	2	—
P.O.J.2878	16	19	19	19	11	7
Others	23	23	20	13	11	9

This table shows that up to 1942, B.H.10(12) occupied approximately 42% of the acreage under cultivation. Since then, the percentage has fallen to 11, and its place as standard variety has been taken by B.34104. The area under P.O.J.2878 and other varieties has been reduced considerably, while that under B.3439 increased up to 1944, when it was 26% but fell rapidly in 1945 to 16% and apparently has remained there. This variety is highly resistant to mosaic disease in Jamaica, and for this reason if no other will probably be planted for some time to come. B.34104 is very susceptible to mosaic, but at the same time appears to be tolerant. It gives good plant and ratoon yields, and under Jamaica conditions appears to be as good as or better than any other seedling tried. B.37161 and B.37172 are now coming into the picture, but apart from their quality of resistance to mosaic disease, appear to be no better than B.34104.

V. MOSAIC DISEASE INVESTIGATIONS

The seedlings of the B.42' and B.43' Series were tested for resistance to mosaic disease by artificial inoculation, making use of the Sein method, which has been under trial for the past few years. The following seedlings proved to be susceptible to the disease:— B.42114. B.4374, B.43127, B.43133, B.43235, B.43275, B.43330, B.43336. B.43353, B.43380, B.43388 and B.43391.

The season was very dry and relatively cool, and although all plants were given a period of high humidity before and after inoculation, the "take" obtained was by no means satisfactory. A series of 200 Ba.11569 plants which were inoculated at the same time to serve as a check, only gave a take of just over 40%. This is in contrast to 100% take obtained when plants were inoculated in the open in 1944.

VI. STATEMENT OF EXPENDITURE FOR 1945–46

1.	Personal Emoluments	1,449 9 7
2.	Provident Fund	55 0 0
3.	Seedling Trials	1,649 17 3
4.	Stationery & Library	28 12 0
5.	Travelling	309 6 1
6.	Incidentals	30 16 2
7.	Capital	449 19 3
	Total	£3,973 0 4

APPENDIX I

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1945–46 — B.s.47′ AND B.48′ SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery.

CROSS	GROUP	No. Germinations Nov.-Jany. 1945–46	No. Potted Jany.-Feb. 1946	No. Planted in Field Nursery May 1946
	S. officinarum x *S. spontaneum*			
Co.421 x B.4459	Noble x Glagah	1,047	205	150
B.34102 x B.3337	„ x „	1,200	350	150
B.44130 x B.603	„ x „	54	54	30
Ba.11569 x B.4405	„ x „	64	64	48
B.37266 x B.603	„ x „	—	—	—
B.39253 x B.603	„ x „	—	—	—
B.3439 x B.3337	„ x „	1,000	950	300
B.3439 x Local	„ x Local	953	201	—
B.3439 x B.37254	„ x „	—	—	—
B.3439 x B.41255	„ x „	—	—	—
B.3439 x Dacca	„ x „	65	65	48
B.3439 x B.39274	„ x Celebes	221	200	165
B.35247 x B.41211	„ x Local x Celebes	223	176	150
B.35197 x B.41211	„ x „ x „	904	600	300
B.35247 x 39220	„ x Glagah x „	395	200	150
B.35247 x B.3337	„ x „ x „	1,200	1,200	955
B.40157 x B.41211	„ x „ x Local	146	146	100
Co.421 x B.41211	„ x „ x „	4,116	1,406	804
M.D.47 x B.41211	„ x „ x „	308	215	150
B.39223 x B.41221	„ x „ x „	335	202	150
Co.421 x B.41261	„ x „ x „	275	204	190
P.O.J.2878 x B.41211	„ x „ x „	650	607	250
B.35197 x B.40256	„ x Glagah x Local x Celebes	200	200	150
		13,356	7,245	4,240

APPENDIX I—*(Continued)*

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1945–46 — B.s.47′ AND B.48′ SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery.

CROSS	GROUP	No. Germinations Nov.-Jany. 1945–46	No. Potted Jany.-Feb. 1946	No. Planted in Field Nursery May 1946
	S. officinarum x S. spontaneum x S. barberi			
B.35197 x B.37193	Noble x Celebes x Chunnee	969	651	300
B.35207 x P. O. J.2878	Noble x Glagah x Chunnee	495	495	293
B.3365 x B.41242	„ x „ x „	2686	272	150
B.3365 x B.39220	„ x „ x „	159	159	100
B.38260 x B. H. 10 (12)	„ x „ x „	108	108	90
B.3365 x B.4146	„ x „ x „	686	417	150
B.4110 x B. H. 10 (12)	„ x „ x „	1	—	—
B.41238 x B. H. 10 (12)	„ x „ x „	—	—	—
B.38233 x B. H. 10 (12)	„ x „ x „	—	—	—
B.38272 x B.37193	„ x „ x „	2747	407	150
B.4145 x B.37193	„ x „ x „	1400	1260	545
B.42304 x B.37193	„ x „ x „	957	723	150
B.37161 x P. O. J.2878	„ x „ x „	—	—	—
B.3365 x B.40123	„ x Chunnee x Local	57	57	41
B.35206 x B.34104	„ x „ x „	2439	450	300
B.39240 x B.34104	„ x „ x „	—	—	—
B.3365 x B.39268	„ x „ x „	509	203	110
B.37161 x B.41211	„ x „ x „	381	333	240
B.3365 x B.41255	„ x „ x „	368	250	150
B.35218 x B.4098	„ x „ x „	1668	1500	726
B.39177 x B.37193	„ x „ x „	954	720	294
B.35207 x B.4098	„ x „ x „	263	233	150
B.35218 x B.41255	„ x „ x „	217	200	150
B.3439 x Co. 290	„ x „ x „	40	40	26
B.4092 x B.37193	„ x „ x „	86	86	72
B.35206 x B.4098	„ x „ x „	200	200	150
	„ x Celebes x Glagah ..			
B.35247 x B.41227	x Chunnee	750	602	300
B.35197 x B.41226	„ x „ x „	1373	202	150
B.35197 x B.38192	„ x „ x „	616	204	150
B.37162 x B.41228	„ x „ x „	242	200	150
B.35197 x B.42231	„ x „ x „	492	426	150
B.35247 x B.4226	„ x „ x „	341	281	150
	„ x Celebes x Local ..			
B.35197 x B.4098	x Chunnee	290	290	150
B.35197 x B.34104	„ x „ x „	2293	1500	1133

APPENDIX I—*(Continued)*

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1945–46 — B.s.47′ AND B.48′ SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery.

CROSS	GROUP	No. Germinations Nov.-Jany. 1945–46	No. Planted Jany.-Feb. 1946	No. Planted in Field Nursery May 1946
B.39157 x B.4098	Noble x Celebes x Chunnee	764	760	230
B.37227 x B.4098	„ x „ x „	260	251	150
B.38203 x B.41211	„ x Glagah x Local x Chunnee	893	662	200
B.38233 x B.34104	„ x „ x „	1289	1217	720
B.4110 x B.34104	„ x „ x „	2	—	—
B.4145 x B.34104	„ x „ x „	1732	601	448
B.38272 x B.34104	„ x „ x „	898	300	150
B.41277 x B.34104	„ x „ x „	—	—	—
B.39207 x B.38281	„ x „ x „	—	—	—
B.4110 x B.41211	„ x „ x „	—	—	—
B.3439 x Co. 419	„ x „ x „	140	121	116
B.35218 x B.39250	„ x „ x „	296	273	150
B.35218 x B.41242	„ x „ x „	358	201	150
B.4145 x B.4098	„ x „ x „	399	373	200
B.37161 x Co. 419	„ x „ x „	50	50	35
B.4214 x B.41203	„ x „ x „	380	201	150
B.42279 x B.41276	„ x „ x „	613	230	150
B.35218 x B.44236	„ x „ x „	316	316	150
B.4097 x Co. 419	„ x „ x „	46	46	40
B.35218 x B.41276	„ x „ x „	260	260	150
Co. 421 x 4098	„ x „ x „	605	605	498
B.3354 x B.4098	„ x „ x „	676	676	299
B.37266 x B.4098	„ x „ x „	1131	278	120
B.38272 x B.4098	„ x „ x „	300	290	150
B.39223 x Co. 290	„ x „ x „	—	—	—
B.4096 x B (30) L7	„ x „ x „	500	409	150
B.39253 x B.4098	„ x „ x „	210	200	150
Co. 421 x Co. 290	„ x „ x „	157	128	120
B.35247 x B.42114	„ x Galah x Chunnee „ x Local x Celebes	239	239	150
		36.301	21,156	11,396
	S. officinarum x S. spontaneum x S. sinense			
B.35247 x B.37261	Noble x Celebes x Glagah x Sinense	136	125	107
B.35247 x B.37224	„ x „ x „	94	94	70
		230	219	177

APPENDIX I —*(Continued)*

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1945–46 — B.s.47′ AND B.48′, SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery.

CROSS	GROUP	No. Germinations Nov.-Jany. 1945–46	No. Potted Jany.-Feb. 1946	No. Planted in Field Nursery May 1946
	S. officinarum x S. spontaneum x S. barberi x S. sinense			
B.35207 x B.40270	Noble x Chunnee x Glagah x Sinense	18	18	16
B.3365 x B.40271	„ x „ x „	54	54	46
B.34117 x B.35269	„ x „ x „ x	30	30	27
B.39207 x B.40270	„ x „ x „ x	—	—	—
B.40272 x B.40175	„ x „ x „	—	—	—
B.38187 x B.35269	Noble x Chunnee x Glagah x Local x Sinense	—	—	—
B.40272 x Co.290	„ x „ x „	90	90	87
		192	192	176
	S. officinarum x S. sinense			
B.39254 x S.C.12/4	Noble x Sinense	20	20	—
	S. officinarum x S. robustum			
Ba.11569 x B.44234	Noble x Robustum	—	—	—
B.4455 x B.H.10 (12)	„ x „	383	200	150
Ba.11569 x B.44226	„ x „	337	261	150
B.3439 x B.4453	„ x „	402	230	110
B.3439 x B.44227	„ x „	360	260	100
		1,482	951	510
	S. officinarum x S. spontaneum x S. robustum x S sinense			
B.40272 x 32M.Q.657	Noble x Glagah x Robustum x Sinense	105	100	76
B.40272 x 28N.G.251	„ x „ „	615	200	100
B.40272 x C.P.36/156	„ x „ x „	—	—	—
		720	300	176
	S. officinarum x S. barberi x S. sinense			
B.35207 x B.35269	Noble x Chunnee x Sinense	65	65	55

APPENDIX I —*(Concluded)*

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1945–46 — B.s.47′ AND B.48′ SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery.

CROSS	GROUP	No. Germinations Nov.-Jany. 1945–46	No. Potted Jany.-Feb. 1946	No. Planted in Field Nursery May 1946
	S. officinarum x S. barberi x S. robustum			
B.44233 x B.37193	Noble x Chunnee x Robustum	549	213	160
	S. officinarum x S. barberi x S. spontaneum x S robustum			
	Noble x Chunnee x Local ..			
B.4457 x B.4098	x Robustum	1,705	200	140
B.40105 x 32 M.Q.135	„ x „ x „	—	—	—
		1,705	200	140
	S. officinarum x Erianthus arundinaceous			
B.3439 x C.P.36/116 ,	Noble x Erianthus	379	300	150
	S. officinarum x S. spontaneum x E. maximus			
Raiatea x P.O.J.2878	Noble x Glagah x Erianthus	—	—	—
	S. officinarum x S. spontaneum x?			
Fiji 3 x B.41211	Noble x Local x Fiji 3.	—	—	—
	S. officinarum x S. spontaneum x E. arundinaceous			
B.39157 x 28 N.G.7	Noble x Celebes x Erianthus	—	—	—
B.34102 x 28 N.G.7	Noble x Glagah x Erianthus	40	39	29
	E. maximus x E. arundinaceous			
Raiatea x 28 N.G.7	Erianthus x Erianthus	—	—	—
	GRAND TOTALS	55,047	30,900	17,209

APPENDIX II.

SUGAR CANE FIRST YEAR SEEDLINGS — B.47′ SERIES

List of Crosses and the Number of Seedlings Planted in the Field Nursery (April/May, 1945) and the First Year Seedling Trial (October/November, 1945)

CROSS	GROUP	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
	S. officinarum x S. spontaneum		
Co.421 x B.603	Noble x Glagah	190	80
„ x B.H.10 (12)	„ x „	200	80
P.O.J.2878 x B.H.10 (12)	„ x „	94	70
B.3439 x B.39229	„ x „	100	60
B.37266 x B.3337	„ x „	150	77
B.3353 x B.3337	„ x „	150	77
B.34102 x B.3337	„ x „	538	303
B.37162 x P.O.J.2878	Noble x Celebes x Glagah	150	80
B.37227 x B.3337	„ „ x „	200	80
B.35247 x 3337	„ x „ x „	1,000	600
B.35197 x B.3337	„ x „ x „	200	100
B.35197 x B.39257	Noble x Glagah x Local	150	80
		3,122	1,687
	S. officinarum x S. barberi		
B.37161 x B.3337	Noble x Chunnee x Glagah	461	200
B.37161 x B.37175	„ x „ x „	209	80
B.3365 x B.3337	„ x „ x „	811	300
B.37161 x P.O.J.2878	„ x „ x „	588	400
B.41277 x B.37193	„ x „ x „	150	80
Co.421 x B.37175	„ x „ x „	150	80
B.35207 x B.37175	„ x „ x „	150	80
B.3439 x B.37175	„ x „ x „	700	203
B.3365 x B.4148	„ x „ x „	149	80
Co.421 x B.41227	„ x „ x „	491	200
B.35207 x B.34104	„ x „ x „	200	80
Co.421 x B.41229	„ x „ x „	211	80
B.35207 x P.O.J.2878	„ x „ x „	1,007	500
Co.421 x B.37193	„ x „ x „	300	80
B.3365 x B.41203	„ x „ x „	150	80
B.35207 x B.41211	Noble x Chunnee x Local	210	80
B.35247 x B.40175	Noble x Chunnee x Celebes	200	80
B.3365 x B.39274	„ x „ x „	150	80
B.35247 x B.37193	„ x „ x „	406	99
B.35207 x 41261	„ x „ x Local	200	80
B.35197 x B.41227	Noble x Chunnee x Celebes x Glagah	510	100
B.35247 x B.37175	„ x „ x „	199	80
		7,602	3,122

APPENDIX II. —*(Continued)*

SUGAR CANE FIRST YEAR SEEDLINGS — B.47′ SERIES

List of Crosses and the Number of Seedlings Planted in the Field Nursery (April/May, 1945) and the First Year Seedling Trial (October/November, 1945)

CROSS	GROUP	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
	S. officinarum x S. spontaneum x S. robustum		
B.3172 x 28 N.G.251	Noble x Glagah x Robustum	95	48
Co.421 x C.P.36–127	„ x „ x „	310	80
C.P.36—158 x P.O.J.2878	„ x „ x „	150	33
B.35247 x 32 M.Q.657	Noble x Celebes x Robustum	189	80
B.35197 x 32 M.Q.629	„ x „ x „	60	44
B.35197 x 28 N.G.251	„ x „ x „	150	70
		954	355
	S. officinarum x S. spontaneum x S. sinense		
Co.421 x B.35269	Noble x Glagah x Sinense	200	80
Merthi x P.O.J.2878	„ x „ x „	50	30
B.40272 x B.H.10(12)	„ x „ x „	261	80
B.35247 x B.35269	Noble x Celebes x Sinense	150	80
		666	270
	S. officinarum x S. barberi x S. sinense		
Kavanjire x B.37193	Noble x Chunnee x Sinense	131	72
	S. officinarum x S. spontaeum x S. barberi x S. sinense		
B.3365 x B.37261	Noble x Glagah x Chunnee x Sinense	290	80
B.40272 x B.37193	„ x „ x „	496	200
B.3365 x B.35276	„ x „ x „	150	80
		936	360
	Co.290 & its Deivatives		
B.39207 x B.34104	Noble x Chunnee x Co. 281	150	80
B.3365 x B.34104	„ x „ x „	759	300
B.37161 x C. P. 28/11	„ x „ x „	32	80
B.40157 x B. 34104	Noble x Glagah x Co. 281	89	60
B.34117 x P. O. J. 2878	„ x „ x „	150	80
P. O. J. 2878 x B.34104	„ x „ x „	510	300

APPENDIX II. —*(Concluded)*

SUGAR CANE FIRST YEAR SEEDLINGS — B.47′ SERIES

List of Crosses and the Number of Seedlings Planted in the Field Nursery (April/May, 1945) and the First Year Seedling Trial (October/November, 1945)

CROSS	GROUP	No. Planted In Field Nursery	No. Planted in First Year Seedling Trial
B.3354 x B.34104	Noble x Glagah x Co. 281	400	200
B.34102 x B.34104	„ x „ x „	600	200
B.3371 x B.34104	„ x „ x „	185	80
Co. 421 x B.34104	„ x „ x „	500	100
B.38203 x B.34104	Noble x Chunnee x Glagah x Co. 281	200	100
B.41238 x B.34104	„ „ „ x „	150	90
B.4111..x..B.34104	„ „ „ x „	200	80
B.37162 x B.34104	Noble x Celebes x Co.281	150	77
B.35197 x B.34104	Noble x „ x „	1,200	500
B.35197 x Co. 281	„ x „ x „	300	81
B.37227 x B.34104	„ x „ x „	200	84
B.39157 x B.34104	„ x „ x „	149	81
B.35247 x C. P. 28/11	„ x „ x „	55	42
Uba x B.34104	Noble x Sinense x Co.281	85	50
B.39254 x B.34104	„ x „ x „	96	60
		6,160	2,675
	Co.290 & its Derivatives		
B.40117 x B.34104	Co.290 x Co.281	28	22
B.40105 x B.34104	„ x „	90	60
B.4091 x B.34104	„ x „	190	80
B.4096 x B.34104	„ x „	199	80
B.4094 x P. O. J. 2878	Noble x Glagah x Co.290	94	70
B.35218 x P. O. J. 2878	„ x „ x „	117	80
B.4096 x B.3337	„ x „ x „	150	80
B.35218 x B (30) L. 7.	„ x „ x „	150	127
B.34102 x Co. 290	„ x „ x „	70	50
B.40116 x B.3337	„ x „ x „	20	18
B.35218 x Tabongo	„ x „ x „	200	78
B.35247 x B.39178	Noble x Celebes x Co.200	159	79
B.35247 x B.4098	„ x „ x „	199	84
B.35247 x Co. 419	„ x „ x „	250	100
B.35218 x B.4098	Co.290 x Co.290	199	105
B.35218 x B.40115	„ x „	80	60
B.3439 x Co. 290	Noble x Co.290	100	60
B.37161 x B.4098	Noble x Chunnee x Co.290	506	200
B.40272 x Co.290	Noble x Sinense x Glagah x Co.290	1,620	1,000
B.35218 x C. P. 36-134	Noble x Robustum x Co.290	42	25
B.35218 x C. P. 36-137	„ x „ x	33	30
		4,496	2,488
	GRAND TOTALS	24,067	11,029